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Discourse in Inquiry Science Classrooms, DiISC Version 2.0 (User's manual for an observation research instrument)

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DISCOURSE in INQUIRY SCIENCE CLASSROOMS

DiISC, VERSION 2.0

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DISCOURSE IN INQUIRY SCIENCE CLASSROOMS,

DiISC, VERSION 2.0

In addition to the observational notes that one would make the following information may be important to the research or professional development project.

Teacher Name: _____

Course Subject: _____

Grade(s): _____

School Name: _____

School District Name: _____

Observer's Name: _____

Date: _____

Time: _____

Lesson Topic: _____

Lesson Plan Attached: **Yes** **No**

NGSS Alignment:

Performance Expectation(s): _____

Science Practices: _____

Engineering Practices: _____

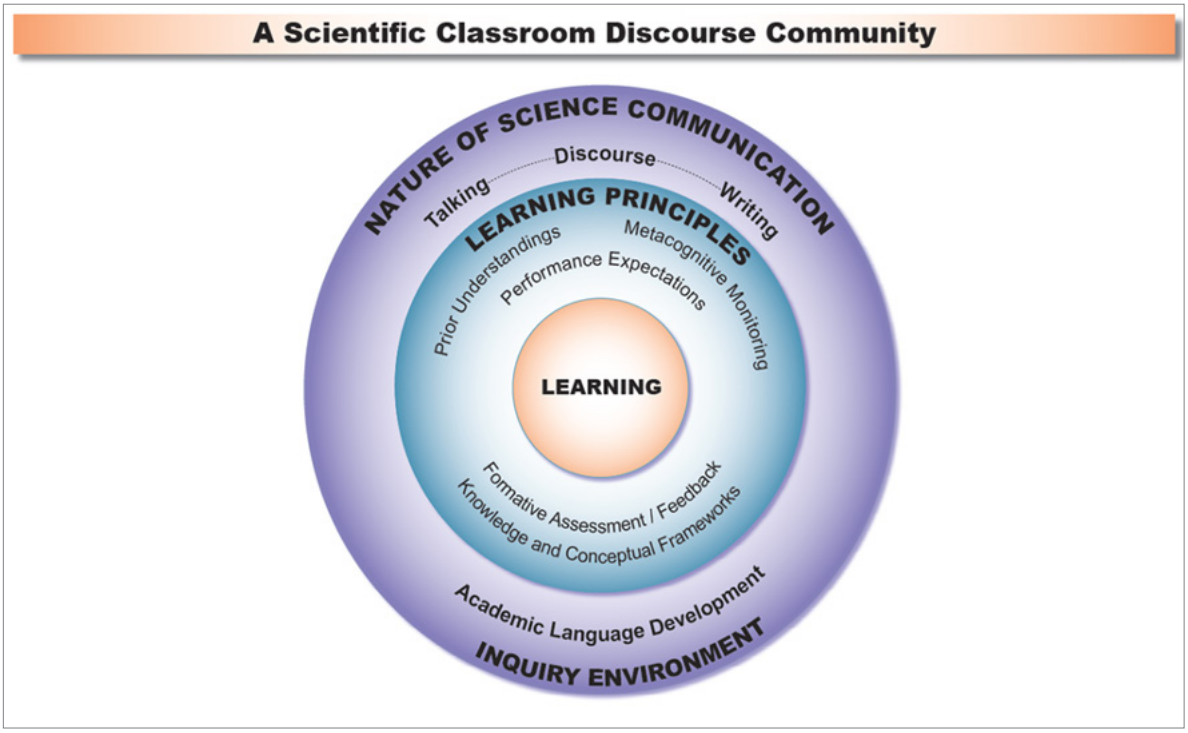
Overall Student Demographics (e.g., sex, gender, racial/ethnic diversity, multilingual learners, students with special talents and/or needs, etc.)

Brief description of classroom activity, classroom features (e.g., arrangement of lab stations, student seating, etc.), other significant information

DiISC 2.0 INSTRUCTIONS

The purpose of the DiISC (Discourse in Inquiry Science Classrooms) 2.0 instrument is for observers to be able to identify and describe the level of inquiry-based instructional practices occurring in different science content area classrooms. This instrument was developed using the Scientific Classroom Discourse Community framework. Each of the five categories, or scales, on the DiISC was designed to address one of the elements of this framework and aligns with the Next Generation Science Standards, specifically with the science and engineering practices.

Figure 1. *Original Professional Development Theoretical and Conceptual Framework (from Lewis, Baker, Bueno Watts, & Lang, 2014)*



Instrument Scales

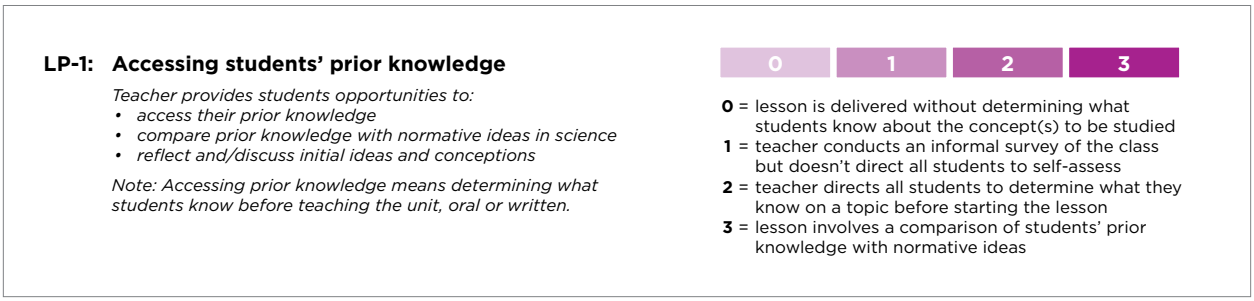
The DiISC 2.0 includes five different scales: Inquiry (I), Oral Discourse (OD), Written Discourse (WD), Academic Language Development (ALD), and Learning Principles (LP). The Inquiry scale focuses on the NGSS science and engineering practices (National Research Council [NRC], 2013). The written and oral discourse scale items specify different discourse strategies in the lesson, such as peer-to-peer discussion, formal scientific writing, and connecting everyday language with scientific terminology. The Academic Learning Principes scale describes ways that teachers bridge academic language with students' everyday language and culture. The Learning Principles scale items include a variety of strategies such as accessing students' prior knowledge, contextualizing information between concepts, metacognition, as well as, developing community norms. More detailed information about the instrument and how it was designed can be found in the original DiISC reference manual (Baker, et al., 2008).

Scoring Items

The DiISC 2.0 items are organized in two columns: (1) the left column describes the item and aspects of teacher behaviors that may be associated with the specific instructional strategy, and (2) the right column provides guidance for choosing a score using a rubric. Thus, the scale for each item includes an explanation of the rubric and how to rate each item from 0 to 3. A "0" means no inquiry strategies were used and a score of "3" indicates a high level of inquiry. On this instrument, users should only pick whole numbers as the instrument was designed to reflect categorical scores, not continuous numbers. In other words, each item should not have a score with partial points.

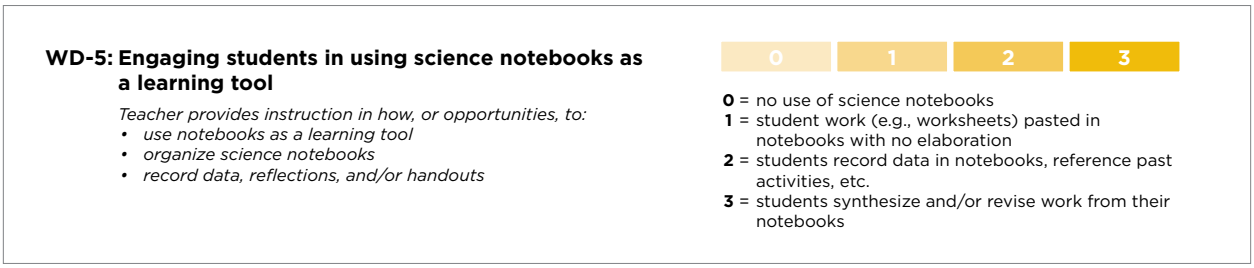
The figure below illustrates an example of a learning principles item on the DiISC 2.0: LP-1, "Accessing students' prior knowledge." Below the item, it provides specific examples of strategies a teacher might use in the classroom, such as providing students with the opportunity to: "compare prior knowledge with normative ideas in science." This item also includes a footnote defining prior knowledge. On the right side of the table, rubric scores range from 0 through 3. Below those ratings, there is an example of what each rating could look like, for example, a "0" is when the "lesson is delivered without determining what students know about the concept(s) to be studied," while a score of a "3" could be awarded if the "lesson involves a comparison of students' prior knowledge with normative ideas."

Figure 1. *DiISC 2.0 learning principles item example*



For example, consider if a teacher was starting a new unit on magnets. A lesson that would score a "0" would be one that dives into the lesson without attending to students' preconceptions and knowledge about magnets. A lesson that would score a "1" would be one in which a teacher asks students to raise their hands if they have heard about magnets before. The teacher in this case could have called upon one or two students to share what they know, but did not ensure that all students had the opportunity to consider and communicate this information. However, if the teacher had decided to ask the class to fill out the "Know" and "Want to know" columns of a "KWL" chart and then asked students to share with their elbow partners before calling on several different groups' representatives to share something from each column, this lesson would be more appropriately scored a "2." Finally, a lesson that could be scored as a 3 would have needed to have elaborated on the previous example using the KWL chart, but also ask students to justify their reasoning.

Figure 2. *DiISC 2.0 written discourse item example*



By way of another example, this time from the written discourse category of items, we turn to the use of scientific notebooks and their many varied uses. A lesson that does not employ the use of scientific notebooks would earn a "0." A lesson that could score a "1" would be a lesson that either has students pasting worksheets into their notebooks without any elaboration or reflection, the use of worksheets in a packet, or the use of digital worksheets in a slide set such as Google Slides. In contrast, a lesson for which students would write out lab procedures, record data, and work on activities in a physical or digital notebook could score a "2" due to the task having a higher cognitive demand. A lesson in which the teacher asks students to reflect on how their conceptions of a topic have changed over the course of a unit in their notebooks in addition to writing data and lab procedures and activities would be sufficient for the highest score of a "3."

Figure 3. *DiISC 2.0 inquiry item example*

A final, third example, of how to score teachers' instructional practices provides guidance for scoring inquiry-based instruction. The periodic table can be introduced in a variety of ways. When a teacher only lectures and shows videos on the patterns and groupings based on the periodic table and students as passive recipients of this information, this type of lesson would score a "0." A lesson that introduces the topic through the use of cards with imaginary elements that students have to organize into patterns with groups and explain them to the teacher before the teacher introduces the periodic table and its design would be scored a "1". In order for the lesson to reach a "2," the previous lesson could be modified such that the teacher asks students to take a "gallery walk" through the classroom reviewing each others' work and talking with their classmates. In the last stage of the lesson, students would then update their own patterns and groupings using the feedback they received from their fellow students. Then groups would have to explain to the class their patterns and how they changed their understanding. Then the teacher could assign actual elements where students would repeat the process. A high, open-ended exploration in a chemistry class might be one in which the teacher shares a solution and asks students to develop and implement a procedure to separate out the different chemicals into their original classifications.

Instrument Calibration by Users

If the DiISC 2.0 instrument is being used by a team, it is important that the team become calibrated prior to independent coding of science lessons (Gall, et al., 2003). For the purposes of becoming calibrated and coming to consensus on scores for a specific lesson, team members can watch a video or conduct an in-person observation of a lesson and code it individually before discussing how they arrived at the codes and what evidence they used to support their selection of specific codes. If the team is larger than 2 people, then employing paired observations, coding, and discussion is also very helpful to improve all users' understanding and consistency of coding. In long-term projects, recalibration is also strongly encouraged to ensure consistent and reliable codes. In addition to the examples provided in the original reference manual, teams are encouraged to keep notes about the group's coding decisions.

Technical Information

Additional information about the validation of the DiISC Version 2.0 can be found in the appendix. An associated manuscript is under review with the full details of the external validation argument (Lewis, E., Lucas, L., Helding, B., Tankersley, A., Rivero, A., Hasseler, E., & Baker, D. (under review). Discourse in Inquiry Science Classrooms (DiISC) Version 2.0: A Validity Argument for a Secondary Science Classroom Observation Instrument), which can be requested via correspondence with the primary author (elewis3@unl.edu).

References

Baker, D., Beard, R., Bueno-Watts, N., Lewis, E., Özdemir, G., Perkins, G., Uysal, S., Wong-Kavas, S., & Yaşar-Purzer, S. (2008). *Discourse in Inquiry Science Classrooms* (DiISC): Reference Manual, Technical Report No. 001. The Communication in Science Inquiry Project (CISIP): Arizona State University. (Note: Authors listed in alphabetical order after PI) https://digitalcommons.unl.edu/teachlearnfacpub/121/.

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(I) INQUIRY SCALE

These items measure the degree to which teaching takes place in a student-centered classroom where students are actively engaged in activities to explore the natural world with varying degrees of investigative independence using scientific practices.

I-1: Teacher creates an environment that supports inquiry

Teacher provides students with:
- *guidelines and time for (hands-on) exploration*
- *tools and techniques for analysis of data*
- *opportunities to elaborate on conceptual understanding*

0 | 1 | 2 | 3

0 = teacher lecture, vocabulary worksheet
1 = low level inquiry, directed, convergent activity
2 = medium, somewhat divergent
3 = high, open-ended exploration

I-2: Teacher engages students, asking scientific questions for the purpose of investigation (hands-on or other means)

Teacher provides students opportunities to:
- *formulate questions about the natural world*
- *present explanations for questions*
- *distinguish between scientific and non-scientific questions*

0 | 1 | 2 | 3

0 = teacher generates question or no investigation
1 = limited opportunity, rote, cookbook activity
2 = students directed to form scientific questions to be investigated
3 = students form and explain reasoning behind the scientific questions for their investigation

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I-3: Opportunities for students to design and plan exploration of the natural world individually or in groups

Teacher provides opportunities and guidance to:
- *plan and conduct scientific investigations individually*
- *plan and conduct scientific investigations in groups*
- *justify procedures before carrying out investigations*

0 | 1 | 2 | 3

0 = no activity or activity has a set procedure
1 = students are all expected to design the same procedure
2 = students design a procedure but are not required to justify
3 = students design, plan, and justify their approach to exploration of a topic

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I-4: Opportunities for early stages of scientific exploration: making observations, recording data, and constructing logical representations (e.g., graphs)

Teacher provides opportunities to:
- *make observations through doing the activity*
- *record and use data*
- *record and represent data in logical forms that show patterns and/or connections*

0 | 1 | 2 | 3

0 = no exploration
1 = limited opportunity to engage in exploration
2 = students collect and/or manipulate data
3 = extensive exploration

I-5: Opportunities for later stages of scientific exploration: explaining phenomena via claims and evidence, making predictions, and/or building models

Teacher provides students opportunities to:
- *make claims, provide evidence, and develop explanations*
- *revise explanations and models using data and logic*
- *make predictions and build models*

0 | 1 | 2 | 3

0 = no use of data for scientific explanation
1 = teacher-led, incidental use of claims and evidence
2 = students generate scientific explanation and/or models
3 = includes all of 2 and teacher directs students to evaluate their scientific explanations and revise

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I-6: Generating scientific arguments and constructing critical discourse about limits and sources of error

Teacher provides students opportunities to:
- *think of other ways to interpret data using scientific knowledge and logic to generate scientific arguments*
- *identify limits and exceptions of interpretations of data*
- *discuss the effects of error on results and suggest ways to reduce error in collecting data*

0 | 1 | 2 | 3

0 = no evaluation of scientific arguments or conclusions
1 = teacher provides possible sources of error in their investigations
2 = students generate sources of error and alternative explanations are generated
3 = students are directed to revise and evaluate their scientific explanations, consider alternative explanations, and sources of error

(OD) ORAL DISCOURSE SCALE

These items measure the degree to which teachers bridge everyday experiences and scientific discourse by providing students with opportunities to build scientific vocabulary, engage in peer-to-peer discussions that lead to scientific explanations, and exploring the nature of scientific communication (i.e., a scientific classroom discourse community).

OD-1: Teacher promotes discourse through questioning

Teacher asks questions:
- *that require analysis and comparison*
- *that are divergent and have multiple possible answers*
- *to redirect for more information, to evaluate answers, and to uncover students' reasoning*

0 | 1 | 2 | 3

0 = no questioning
1 = teacher conducts IRE with convergent questions
2 = teacher asks divergent questions but doesn't engage all students in the discussion
3 = teacher probes for understanding and directs student-to-student discourse.

OD-2: Teacher promotes peer-to-peer discussion

Teacher:
- *provides opportunities for small group discussion and negotiation of meaning with specific questions or tasks*
- *monitors student participation in groups*
- *facilitates large group discussion among students or student presentation*

0 | 1 | 2 | 3

0 = no student-to-student talk
1 = teacher allows students to talk
2 = teacher monitors students' discourse
3 = teacher structures student interactions to promote rich peer-to-peer discussion

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OD-3: Teacher (or instruction) bridges everyday experiences and scientific discourse

Teacher:
- *is sensitive to gender issues of discourse (using topics of interest to all students)*
- *connects everyday (e.g., pop culture) and scientific discourse*
- *distinguishes between everyday meaning of words and their scientific meanings*

0 | 1 | 2 | 3

0 = teacher just talks about science with no links
1 = teacher gives examples that not all students relate to
2 = teacher provides clear and relatable examples and makes connections to science
3 = teacher extends and builds on example(s) ensuring understanding

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OD-4: Teacher engages students in discussion that emphasizes the nature of science (NOS)

Teacher provides students with opportunities to:
- *discuss that science is tentative and fallible*
- *discuss results and methods (e.g., replication of experiments) with skepticism and openness*
- *engage in public sharing of knowledge (as a way to incorporate NOS)*

0 | 1 | 2 | 3

0 = no discussion of NOS
1 = teacher transmission of information about NOS
2 = whole group or small group discussion of NOS
3 = teacher facilitates in-depth discussion of the NOS with whole group

(WD) WRITTEN DISCOURSE SCALE

These items measure the degree to which teachers provide students with opportunities to pre-write, write, and share their writing in order to acquire the language patterns and vocabulary to communicate scientific ideas, use science notebooks, and write in a variety of genres. Writing supports the development of a scientific classroom discourse community.

WD-1: Formal writing in a genre that reflects the nature of science

Teacher provides students with opportunities to:
- *write for different audiences and purposes*
- *use expository, reflective, and expressive formats (e.g., newspaper article, poster, a lab report / scientific investigation report)*
- *emphasize the nature of science*

0 | 1 | 2 | 3

0 = no formal writing
1 = writing is unstructured or simply restated from text
2 = teacher provides a limited data set to students to write with a purpose
3 = teacher provides students a clear structure incorporating high level of inquiry, specific audience, and reflects the NOS

WD-2: Engaging students in prewriting associated with science concepts

Teacher provides opportunities for students to:
- *use brainstorming strategies and/or create concept maps*
- *develop questions and outlines*
- *take notes and/or use scientific terminology or symbols during scientific inquiry investigations*

0 | 1 | 2 | 3

0 = no writing
1 = teacher promotes general note-taking
2 = teacher provides a structure for note-taking
3 = teacher has students generate their own ideas for the purpose of formal writing

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WD-3: Engaging students in recursive writing processes using rubrics to review and revise

Teacher provides time and opportunities for students to:
- *review and revise through multiple drafts*
- *engage in peer-to-peer editing*
- *use rubrics that guide revision*

** Note: Homework does not qualify.*

0 | 1 | 2 | 3

0 = feedback provided but no revision of student work
1 = minimal time provided and students revise without a rubric
2 = students use rubrics to revise their writing
3 = students revise through either teacher feedback and/or peer editing with the use of rubrics

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WD-4: Teacher provides direct instruction in writing content, forms, and processes

Teacher:
- *provides instruction about the nature of scientific writing*
- *provides templates for each genre (lab report, brochure)*
- *explains function and appropriate time to use genres*

0 | 1 | 2 | 3

0 = no direct instruction about how to write scientifically
1 = teacher provides template for how to write
2 = teacher explains why and when a scientific form is to be used
3 = teacher models how students would use a specific genre of writing

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WD-5: Engaging students in using science notebooks as a learning tool

Teacher provides instruction in how, or opportunities, to:
- *use notebooks as a learning tool*
- *organize science notebooks*
- *record data, reflections, and/or handouts*

0 | 1 | 2 | 3

0 = no use of science notebooks
1 = student work (e.g., worksheets) pasted in notebooks with no elaboration
2 = students record data in notebooks, reference past activities, etc.
3 = students synthesize and/or revise work from their notebooks

(ALD) ACADEMIC LANGUAGE DEVELOPMENT SCALE

These items measure the degree to which teachers use visual aids, supplemental resource materials, clear instruction throughout the lesson, and lessons that build on students' language and culture. It also measures instruction for student interactions and academic learning strategies and opportunities for students to acquire scientific vocabulary.

ALD-1: Providing students opportunities to acquire vocabulary

Teacher provides opportunities for:
- *reviewing and repetition of vocabulary and tasks*
- *building academic language from the vernacular*
- *interpreting words from contextual clues*

0 | 1 | 2 | 3

0 = teacher does not provide vocabulary building opportunities
1 = students are given incidental, unstructured opportunities
2 = teacher provides structured opportunities for students to acquire vocabulary
3 = teacher monitors students for understanding of vocabulary as they perform tasks

---

ALD-2: Teacher uses clear instruction throughout lesson by modeling expectations

Teacher:
- *varies speech and enunciates clearly*
- *explicitly defines content and language objectives of the lesson*
- *gives simplified directions*

0 | 1 | 2 | 3

0 = teacher's directions are unclear and confusing
1 = clear directions, but objective is vague
2 = teacher provided clear objectives and directions
3 = teacher monitors for understanding of objectives and directions

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ALD-3: Using visual aids and gestures to communicate with students

Teacher:
- *uses visual imagery, organizers (e.g., thematic boards, word wall displays, concept maps)*
- *employs gestures*
- *uses manipulatives for abstract and concrete concepts*

0 | 1 | 2 | 3

0 = teacher does not use visual aids or gestures
1 = minor use of a visual aid or gestures
2 = consistent use of gestures and/or visual aids or a well-developed example of a specific visual or manipulative
3 = teacher monitors understanding of visual aids and/or manipulatives

---

ALD-4: Building lesson on students' language (vernacular or non-English) OR culture

Teacher incorporates into instruction:
- *culturally relevant examples (family, pop culture, ethnic traditions)*
- *native language when appropriate*
- *cultural artifacts (anything human-made) and community resources (eating rice and beans, force on tortilla press, force on toes of a ballerina)*

0 | 1 | 2 | 3

0 = teacher does not incorporate links to language or culture
1 = minor use of students' language or culture
2 = teacher bridges students' language and culture consistently through lesson
3 = lesson is planned and executed using familiar language with culturally relevant links to science content

---

ALD-5: Teacher addresses multiple levels of academic language proficiency (differentiated instruction and/or assessment)

Teacher:
- *provides activities of varying academic linguistic demands*
- *uses assessments that match academic language proficiency*
- *adjusts pedagogy to the language proficiency*

Note: If organization is unclear, be sure to ask teacher how lesson was differentiated for students.

0 | 1 | 2 | 3

0 = one lesson delivered the same way to all students
1 = teacher allows for students to self-pace using same set of activities
2 = differentiated assessments or projects are provided to accommodate students' various levels of academic language proficiency
3 = teacher organizes individual students' activities based on their academic language proficiency

(LP) LEARNING PRINCIPLES SCALE

These items measure the degree to which the teacher aligns lessons with cognitive learning theory and principles. This includes providing opportunities for students to assess prior knowledge, make conceptual connections, and engage in metacognition. The teacher also models thinking, establishes community norms, and promotes an academic focus that supports learning science.

LP-1: Accessing students' prior knowledge

Teacher provides students opportunities to:
- *access their prior knowledge*
- *compare prior knowledge with normative ideas in science*
- *reflect and/discuss initial ideas and conceptions*

Note: Accessing prior knowledge means determining what students know before teaching the unit, oral or written.

0 | 1 | 2 | 3

0 = lesson is delivered without determining what students know about the concept(s) to be studied
1 = teacher conducts an informal survey of the class but doesn't direct all students to self-assess
2 = teacher directs all students to determine what they know on a topic before starting the lesson
3 = lesson involves a comparison of students' prior knowledge with normative ideas

---

LP-2: Teacher and/or students situate factual knowledge (experiences, ideas, data, and explanations to past lessons and/or real-world experiences) within a conceptual framework (fact to concept relationship)

Teacher provides opportunities to:
- *link facts and experiences to promote patterned reasoning*
- *assimilating new information into existing frameworks of past lessons and real-world experiences*
- *place factual knowledge in a conceptual framework*

0 | 1 | 2 | 3

0 = no conceptual framework utilized, just factual information
1 = teacher provides informal opportunities for students to generate understanding of topics
2 = teacher provides formal structure for generating understanding of facts within a conceptual framework
3 = teacher provides opportunities and monitors student understanding

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LP-3: Teacher provides opportunities for students to review key concepts (focus on the review, not the discourse)

Teacher provides opportunities for conceptual understanding:
- *through multiple and rich representations*
- *by linking formal science to ideas beyond the classroom*
- *by reviewing key concepts*

0 | 1 | 2 | 3

0 = teacher does not provide opportunities for reviewing concepts
1 = teacher provides informal review of key concepts
2 = teacher provides formal opportunities for reviewing
3 = teacher provides multiple formal opportunities for reviewing

---

LP-4: Teaching with embedded metacognition for students to elaborate and summarize their understandings

Teacher:
- *models thinking in analysis of tasks or learning*
- *provides advanced organizers and/or develops graphic tools*
- *provides opportunities for students to elaborate and summarize*

0 | 1 | 2 | 3

0 = no opportunity for students to engage in connected metacognitive activity with the science concepts they are learning
1 = students have the opportunity to summarize what they have learned
2 = students have the opportunity to distinguish what they do and don't understand in a structured activity
3 = students have the opportunity to reflect metacognitively and define methods to expand their understanding

---

LP-5: Teaching self-monitoring for understanding (focus on direct instruction of strategies)

Teacher directly instructs students how to:
- *reflect on their understanding, abilities, and affective states*
- *evaluate their own progress and quality of completed tasks*
- *identify what they have and have not been learned*

0 | 1 | 2 | 3

0 = teacher provides no direct instruction of strategies for student awareness of what they know and don't know or what resources they could use to find out
1 = teacher instructs students how to summarize what they have learned
2 = teacher instructs students how to distinguish between what they know and don't know
3 = teacher instructs students how to reflect metacognitively and define methods to expand their understanding

(LP) LEARNING PRINCIPLES SCALE

LP-6: Teacher provides students opportunities to develop awareness of their own learning strengths and challenges

Teacher provides opportunities for students to:
- *self-assess effectiveness of their learning approaches*
- *understand unique learning approaches*
- *set the intensity or the speed of work*

Note: Focus on learning approaches

0	1	2	3

0 = no opportunities provided
1 = students are allowed to self-pace work
2 = students are directed to evaluate their learning approaches to the task at hand
3 = teacher provides resources to self-assess their strengths and challenges

LP-7: Teacher establishes or reminds students of community norms for discourse

Teacher:
- *negotiates, or reminds students of, guidelines for respecting each other's ideas*
- *establishes clear rules and expectations for discourse to promote everyone's participation*
- *provides opportunities for internalizing norms*

0	1	2	3

0 = community norms for scientific discourse are not in place or being generated
1 = teacher has community norms posted in the classroom
2 = teacher refers to classroom norms to remind students and promote equitable participation
3 = teacher involves students in establishing or maintaining community norms

LP-8: Teacher uses feedback strategies that have an academic focus (NOT just praise; "be more specific")

Teacher:
- *uses both oral and/or written feedback*
- *give timely feedback*
- *encourages student self-reflection*

0	1	2	3

0 = teacher does not provide students with any feedback
1 = teacher provides minor feedback
2 = teacher provides sufficient feedback that encourages students to reconsider their ideas
3 = teacher uses multiple forms of feedback

APPENDIX

Table 1 shows a factor analysis of the DiISC items. The factors were extracted using principal axis factoring, with PROMAX rotation for simple solutions. Factor scores can be extracted using simple Barlett regressions. This was part of the structural validity argument, the rest of which can be found in: Lewis, E., Lucas, L., Helding, B., Tankersley, A., Rivero, A., Hasseler, E., & Baker, D. (under review). Discourse in Inquiry Science Classrooms (DiISC) Version 2.0: A Validity Argument for a Secondary Science Classroom Observation Instrument (or via correspondence with the primary author at: elewis3@unl.edu).

Table 2 shows the correlation between factors as determined by the factor analysis. This was another element of a coherent validity argument developed by the authors. Finally, Table 3 provides a cross comparison of items between the original and updated DiISC instrument.

Table 1.

DiISC Factor Structure with low Correlation Items Removed

Pattern Matrix[a]

	Factor		
	1	2	3
i4	.904		
i1	.863		
i2	.734		
i5	.590		
i24	.436		
i3	.426	.353	
i8	.414		.282
i28	.377		.360
i20	.270		.259
i12		.596	
i13		.536	
i14		.510	
i16		.429	
i22		.390	
i25		.347	
i17		.343	
i6		.281	
i34		.269	
i32		.257	
i30			.477
i18			.475
i9			.414
i7			.413
i23			.393
i19	.286		.373
i31		.274	.324
i36			.318
i29			.307
i21			.296
i26			.257
i11			.257

Extraction Method: Principal Axis Factoring.
Rotation Method: Promax with Kaiser Normalization.
a. Rotation converged in 7 iterations.

Table 2.

Multivariate Test Results

Factor	Pillai's Trace	D*f*	sig.	partial eta^2
DiISC 1	0.17	(2,802)	$p < 0.01$	0.17
DiISC 2	0.02	(2,802)	$p < 0.01$	0.02
DiISC 3	0.09	(2,802)	$p < 0.01$	0.19

APPENDIX

Table 3.

Cross-referenced Items from DiISC Versions 1 and 2

Category	DiISC Version 1.0 Item Number	DiISC Version 2.0 Item Number
Inquiry	1 2 3 4 5 6	I-1 I-2 I-3 I-4 I-5 I-6
Oral Discourse	7 8 9 10 11	OD-1 OD-2 OD-3 - OD-4
Written Discourse	12 13 14 15 16 17	WD-1 WD-2 WD-3 - WD-4 WD-5
Academic Language Development	18 19 20 21 22 23 24 25	ALD-1 ALD-2 ALD-3 ALD-4 ALD-5 ALD-6 ALD-7 ALD-8
Learning Principles	26 27 28 29 30 31 32 33 34 35 36	LP-1 - LP-2 LP-3 LP-4 LP-5 LP-6 - LP-7 - LP-8

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